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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/740,299	12/19/2000	Yrjo Keranen	4925-95	7221

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EXAMINER	
MEHRPOUR, NAGHMEH	
ART UNIT	**PAPER NUMBER**
2686	

DATE MAILED: 01/26/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/740,299	KERANEN ET AL.	
	Examiner	Art Unit	
	Naghmeh Mehrpour	2686	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on *10 November 2005*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-3, 5-21* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-3, 5-21* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. Claims 1-3, 5-21, is rejected under 35 U.S.C. 103(a) as being unpatentable over Keranen et al. (US Patent 6,681,099 B1) in view of Bull et al. (US Publication 2006003775 A1).

Regarding claim 1, Keranen teaches a method for determining a geographic location of user equipment via a location service server in a wireless network, comprising the steps of:

a1) receiving by the wireless network, a request for locating a user equipment (col 4 lines 62-67);

(a) determining a value of the transmission timing delay of the user equipment (col 3 lines 20-25);

c) measuring a round trip time of a radio signal between at least one other transceiver node and the user equipment, wherein the other transceiver node is connected to the user equipment (col 3 lines 55-65, col 4 lines 43-47);

(b) measuring a round trip time of a radio signal between a connected transceiver node and the user equipment (col 3 lines 55-57, col 4 lines 43-47), wherein the connected transceiver node is in active communication with the user equipment (col 5 lines 1-20);

(d) calculating a distance between the user equipment (UE) and the connected transceiver node and between the user equipment and each of the at least one other transceiver node using the transmission timing delay determined in said step (a) (col 4 lines 52-62); and

(e) determining the location of the user equipment using the distances calculated in said step (d) (col 4 lines 50-62).

Keranen fails to teach a method wherein:

a2) determining if the user equipment is in active communication with a connected transceiver node in response to the request a user equipment requesting a connection between the user equipment and a selected node if the user equipment is not in active communication with any transceiver node; and connecting the selected transceiver node with the user equipment so that the selected transceiver node comprises a connected node; and

c) measuring a round trip time of a radio signal between at least one other transceiver node and the user equipment, wherein the at least one other transceiver node is not connected to the user equipment. However, Bull teaches a method wherein

a2) determining if the user equipment is in active communication with a connected transceiver node in response to the request a user equipment

requesting a connection between the user equipment and a selected node if the user equipment is not in active communication with any transceiver node; and connecting the selected transceiver node with the user equipment so that the selected transceiver node comprises a connected node (0098, 0245, 00274, 0280, 0288); and c) measuring a round trip time of a radio signal between at least one other transceiver node and the user equipment, wherein the at least one other transceiver node is not in active communication the user equipment. Bull teaches a method wherein no transceiver node is connected to the UE, because a location request is made, and the controller requests a channel set up, the UE is required to start signaling in a random access channel (0098, 00245, 00274, 0280, 0288). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to combine the above teaching of Bull with Keranen, in order to provide a system that automatically locate any wireless device in the service area dialing specified "trigger" number.

Regarding claim 2, Keranen teaches a method wherein said step (a) comprises determining the transmission timing delay by using the connected transceiver node to query the user equipment (col 4 lines 30-51).

Regarding claim 3, Keranen teaches a method wherein said step (a) comprises determining the transmission timing delay by setting the transmission timing delay to equal a default value T.sub.0 (col 2 lines 12-25).

Regarding claim 5, Keranen teaches a method wherein said step of requesting a connection comprises requesting, by the selected transceiver node, a return trip time measurement to connect the user equipment to the selected transceiver node **in response to the request for locating a user equipment (col 4 lines 62-67).** Keranen does not specifically mention a method wherein said step of requesting a connection comprises requesting, a return trip time measurement via a random access channel However, Bull teaches a method wherein said step of requesting a connection comprises requesting, a return trip time measurement via a random access channel (0098, 00245, 00274, 0280, 0288). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to combine the above teaching of Bull with Keranen, in order to provide a system that automatically locate any wireless device in the service area dialing specified "trigger" number.

Regarding claim 6, Keranen teaches a method wherein said step (c) comprises comparing a time-of-arrival of an uplink transmission from said UE at the non-connected (see rejection for claim 1) transceiver nodes to the time-of-arrival of the uplink transmission at the connected transceiver node, and determining the propagation time of each of the non-connected transceiver nodes (see claim 5, for non-connected node) therefrom (col 5 lines 5-25).

Regarding claim 7, Keranen teaches a method wherein c) measuring a round trip time of a radio signal between at least one other transceiver node and the user equipment (col 4 lines 43-47), Keranen fails to teach a method wherein at least one other transceiver node is not connected to the user equipment. However Bull teaches a method wherein c) measuring a round trip time of a radio signal between at least one other transceiver node and the user equipment, wherein the at least one other transceiver node is not in active communication with to the user equipment (0098, 00245, 00274, 0280, 0288). Bull teaches there is no transceiver node is connected to the UE, because a location request is made, and the controller requests a channel set up, the UE is required to start signaling in a random access channel. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to combine the above teaching of Bull with Keranen, in order to provide a system that automatically locate any wireless device in the service area dialing specified "trigger" number.

Regarding claims 8,18, Keranen teaches a method wherein said step (e) comprises determining the user equipment location by mathematically generating a circle around the connected transceiver node and each of the at least two other transceiver nodes (col 5 lines 25-34), wherein the radius of each circle is the distance of the user equipment to the respective transceiver node determined in said steps (c) and (d), and determining an intersection of the circles (col 5 lines 34-35).

Regarding claim 9, Keranen teaches a method wherein said step of determining the intersection of the circles comprises iteratively increasing or iteratively decreasing the radii of each of the circles until an intersection point is determined (col 5 lines 54-67, col 6 lines 1-8). There are certain situations when the UE timing difference t3-t2 may be different from the defined value. These situations occur When the UE is moving toward or away from a node or BTS, the propagation paths are varying, and there is a soft handover in which a UE is switched from one cell to another (col 4 lines 1-15). Therefore, for determining the intersection of the circles comprises iteratively increasing or iteratively decreasing the radii of each of the circles until an intersection point is determined.

Regarding claim 10, Keranen teaches a method wherein said step (e) comprises determining the user equipment location by mathematically generating a circle around the connected transceiver node and each of the at least one other transceiver node (col 5 lines 25-34), wherein the radius of each circle is the distance of the user equipment to the respective transceiver node determined in said step (d) (col 5 lines 25-34), and determining an angle of arrival radio steps (col 5 lines 53-67, col 6 line 1), and

(d) at the connected transceiver node and the at least one other transceiver node (col 6 lines 1-3).

Regarding claim 11, Keranen teaches a method wherein said step (b) further comprises determining a sector of the area of coverage of the connected transceiver node in which the user equipment is located (col 5 lines 54-62).

Regarding claim 12, Keranen teaches a method wherein said step (c) further comprises searching, by the at least one other transceiver node (base station), within the sector determined in said step (b) (col 5 lines 58-67, col 6 lines 1-8). Examiner explains that when a mobile attempts to access a system. Accordingly, conventional cellular system searching for a new node /new base station upon powering up or handoff to a new base station, the mobile searches for and receives a control channel from the base station.

Regarding claim 13, Keranen teaches a method wherein said steps (a)-(e) are performed in response to receiving a request for the location of a user equipment (col 4 lines 30-51).

Regarding claim 14, Keranen teaches a wireless communication system comprising a core network (col 3 lines 20-25);

means for receiving by the wireless network, a request for locating a user equipment 9col 4 lines 62-67);

a plurality of radio network controllers (col 3 lines 36-39),

a plurality of wireless transceiver nodes for communicating with a user equipment located in a geographical area supported by said transceiver nodes (col 3 lines 29-36), and

a location services server for determining a location of the user equipment (Mobile terminal), said location services server (col 3 lines 20-25) comprising:

means for determining a round trip time for a radio signal from between a user equipment and a connected transceiver node in communication with the user equipment including means for measuring a time from a beginning of transmission of a downlink transmission signal from the connected transceiver node to the reception of an uplink transmission signal from the user equipment to the connected transceiver node in response to the downlink transmission signal (col 3 lines 62-65);

means for determining a round trip time between the user equipment (UE) and at least one other connected transceiver node, which is in communication with the user equipment (col 4 lines 2-5, col 4 lines 43-47);

means for determining a location of the user equipment from the distances of the user equipment from each of the nodes (col 4 lines 2-51).

Keranen fails to teach a method wherein:

means determining if the user equipment is in active communication with a connected transceiver node in response to the request a user equipment requesting a connection between the user equipment and a selected node if the user equipment is not in active communication with any transceiver node. And

connecting the selected transceiver node with the user equipment so that the selected transceiver node comprises a connected node; and

means for determining a round trip time of a radio signal between at least one other transceiver node and the user equipment, wherein the at least one other transceiver node is not connected to the user equipment. However Bull teaches a method wherein:

means for determining if the user equipment is in active communication with a connected transceiver node in response to the request a user equipment requesting a connection between the user equipment and a selected node if the user equipment is not in active communication with any transceiver node, and connecting the selected transceiver node with the user equipment so that the selected transceiver node comprises a connected node (0098, 0274, 0280, 0288);

means for determining a round trip time of a radio signal between at least one other transceiver node and the user equipment, wherein the at least one other transceiver node is not connected to the user equipment (0098, 0274, 0280, 0288). Bull teaches there is no transceiver node is connected to the UE, because a location request is made, and the controller requests a channel set up, the UE is required to start signaling in a random access channel. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to combine the above teaching of Bull with Keranen, in order to locate the mobile based upon a point or several points given by the circles defined using the distances.

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to combine the above teaching of Bull with Keranen modified by Naghian, in order to provide a system that automatically locate any wireless device in the service area dialing specified "trigger" number.

Regarding claims 15,17, Keranen does not specifically mention a wireless communication system wherein said means for determining a round trip time between the user equipment and plurality of other non-connected transceiver node comprises means for receiving an uplink transmission signal from the user equipment at the at least one other non-connected (see claim 1, and claim 6).

Regarding claim 16, Keranen teaches a wireless communication system further comprising means for determining an angle of arrival (AOA) of transmission signals at the connected transceiver node in active communication and the at least one other transceiver node (col 5 lines 65-67, col 6 lines 1-9).

Regarding claim 19, Keranen teaches a wireless communication system further comprising means for determining whether the radii determined are one of too large and too small (col 4 lines 9-22, col 5 lines 25-35). In order to generate a circle around each of the active nodes and calculates the intersection of the circles, when the UE is moving toward or away from the node or BTS the propagation path are varying, and there is a soft handover in which UE is switched from one cell to another. During the

movement of the UE toward or away from the BTS the propagation delay between t1 and t2 changes. The amount that t3 can change in each increment is limited, if the movement is too fast, the UE is prevented from adjusting the t3 time fast enough because of the increment limit. Therefore, the radius that determined at t3 is either too small or too large.

Regarding claim 20, Keranen teaches a wireless communication system wherein said means for determining a location comprises means for iteratively decreasing the radii until an intersection point of the circles is found when the radii are too large and means for iteratively increasing the radii until an intersection point of the circles is found when the radii are too small (col 5 lines 25-35). There are certain situations when the UE timing difference t3-t2 may be different from the defined value. These situations occur When the UE is moving toward or away from a node or BTS, the propagation paths are varying, and there is a soft handover in which a UE is switched from one cell to another (col 4 lines 1-15). Therefore, during the process of determining an intersection of the circles, the radius of the circles are either too large or too small until the exact point of the intersection of the circles is found.

Regarding claim 21, Keranen modified by Naghian fails to teach a wireless communication system wherein the means for connecting comprises means for requesting, by the selected transceiver node, a return trip time measurement via a random access channel to connect the user equipment to connect the user equipment

to the selected transceiver node in response to the request for locating a user equipment. However, Bull teaches a wireless communication system wherein the means for connecting comprises means for requesting, by the selected transceiver node, a return trip time measurement via a random access channel to connect the user equipment to connect the user equipment to the selected transceiver node in response to the request for locating a user equipment (0098, 00245, 00274, 0280, 0288). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to combine the above teaching of Bull with Keranen modified by Naghian, in order to provide a system that automatically locate any wireless device in the service area dialing specified "trigger" number.

Response to Arguments

3. Applicant's arguments with respect to claims 1-20 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

4. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Naghian (US Publication 2002/0086682 A1) disclose method for positioning a mobile station

5. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

6. **Any responses to this action should be mailed to:**

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Naghmeh Mehrpour whose telephone number is 703-308-7159. The examiner can normally be reached on 8:00- 6:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Marsha Banks-Harold be reached (703) 305-4379.

The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

NM

January 20, 2006

CHARLES APPIAH
PRIMARY EXAMINER